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Southern Pine BEETLE NEWS



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Forest Farmers Told of Pine Beetle Devastation

Following are highlights from an address by Dr. Robert C. Thatcher, program manager for the Southern Pine Beetle Program:

"The southern pine beetle continues to cause devastating losses in parts of five Southeastern States—Mississippi, Alabama, Georgia, South Carolina, and North Carolina. Lesser activity has been reported from Texas and Louisiana . . .

SPB infestations are most frequently found in dense, older, slower-growing stands on sites exposed to moisture extremes. For example, flooding, drought, lightning, or logging trigger many infestations. The beetle often kills trees on littleleaf sites, particularly in the Piedmont, and trees infested with annosus root rot on deep, sandy, well-drained soils . . .

Use of beetle-killed timber is an important aspect of SPB control. The physical properties and some of the processing problems associated with beetle-killed timber have been studied in Virginia, North Carolina, Georgia, and Texas. Pulpwood-size trees left standing for up to 24 months after attack may be used for paper by kraftmills in the mid-Atlantic States. Pulpwood yields are affected very little, and there is only a limited effect on paper quality. Lumber grade recovery from beetle-killed sawtimber begins to decline 12 months after foliage fades in the mid-Atlantic States.

In the Gulf Coastal Region, where deterioration is more rapid, beetle-killed trees should be used for lumber within 3 to 6 months. The value of the lumber declines sharply after that

time. Dead trees left standing for more than 90 days cannot be used for plywood due to decay and extensive surface checking. Kraft pulpwood yields are not significantly reduced for up to 1 year, but paper quality is greatly reduced 6 months after tree death.

In the west Gulf Coastal Region, no adjustment in buying price appears necessary for trees dead up to 45 days. However, adjustments in buying prices are necessary for trees dead more than 3 months in this region . . .

Economic impacts of SPB infestations on forest resources are another important study area. A computerized damage prediction model has

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Forest Farmers Conference Stresses Future Opportunities

"Forest Farming—Opportunities for the '80s" was the theme of the 39th annual Forest Farmers Association Conference in Biloxi, Miss.

Keynote speaker Rexford A. Resler, executive director of the American Forestry Association, opened the 3-day meeting at the d'Iberville Hotel by highlighting future opportunities and problems. He told the 300 attendees at the May conference that the future looks bright for southern foresters.

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Pine Beetle, *cont. from page 1*

been developed for estimating future tree mortality over large areas. Historical infestation records, local volume tables, and current market values are used to run the model.

A stand growth model is available for plantations. It is being modified for use in natural, seeded stands. The model allows an analyst to predict damage and to simulate the growth and yield response of such stand management practices as thinning and fertilization.

A benefit-cost analysis is available for evaluating what will happen with and without a control program. The procedure requires data from the stand growth and damage prediction models and estimates timber damage from different control methods.

Methods have also been developed for measuring and evaluating the economic impacts of beetle infestations on recreation, watersheds, esthetics, wildlife habitat, grazing, and wildfire. .

New insecticides for beetle control have been developed. Dursban 4-E and lindane have been registered by the Environmental Protection Agency for SPB control. Data on the effectiveness and safety of Sumithion (fenitrothion) has been provided to the manufacturer and should go to the EPA for registration soon. These three insecticides are equally effective for controlling existing infestations. Trees can be protected from attack for at least 4 months

Another weapon in the arsenal for the beetle battle is the use of **new or improved aerial survey and navigation systems**. A technique has been established for estimating the number and size of SPB infestations and the number and volume of infested trees. The approach uses aerial and ground surveys.

Aerial volume tables have been constructed for SPB-infested loblolly pine stands in Mississippi. These tables will be used in combination with aerial photography to estimate annual timber losses

The accuracy and usability of aerial surveys have been greatly improved by using **Loran-C radio navigation equipment** in survey aircraft. With this equipment, flight crews can quickly and accurately retrace flight lines or photo points in areas where repeated surveys are required.

Methods have been developed for **sampling**

and predicting population trends. Work was done on beetle populations in individual trees in Texas, Mississippi, Arkansas, and North Carolina. Results have been extended to estimating population numbers in single and multiple infestations. Several spot growth models have also been developed to measure and forecast tree mortality. Continuing research will focus on simplifying sampling methods, linking SPB population estimates with damage, and providing a sound basis for decisions on how to control the SPB.

Attractants and inhibitors have been used to prevent or suppress beetle attacks. One attractant, frontalure, disrupted normal mass attack by beetles on uninfested trees at the edge of infestations.

In other field experiments, two inhibitors—*endo-brevicomin* and *verbenone*—significantly reduced beetle landings and brood establishment in baited trees. No additional trees were attacked during the study period. However, many of the trees eventually died when *Ips* engraver beetles moved in to take the place of the southern pine beetle

Integrated forest pest management strategies will be tested soon. Forest protection specialists are in general agreement that a single control method is probably unsuccessful in preventing or controlling losses caused by the SPB, particularly under epidemic conditions. The one-shot approach is a "wait-and-see, crisis response." It does not deal with the basic causes of outbreaks nor does it reduce the recurrence of infestations, even in the same areas.

Instead, specialists feel that losses from the beetle can be reduced over the long run by using a variety of preventive and suppressive approaches that are both economically and ecologically sound.

Proven guidelines for an integrated management system for SPB control are not ready yet, but many of the parts are already available. Soon, the information on beetle activity, forest conditions, and management objectives will be used to make reliable predictions of what will happen with and without SPB control. Predictions will also be made on which control approaches are best suited to local conditions. The resource manager and landowner can then adapt the integrated information to their particular set of circumstances."

Conference, *cont. from page 1*

Einar Roget, deputy chief of the U.S. Forest Service's State and Private Forestry Office, said the South is rapidly emerging as the nation's top timber producing and processing region under the Forest Service's recent Resources Planning Act. He pointed out that much of the timber must come from private, nonindustrial lands. He also stressed the importance of legislative and technical measures encouraging private landowners to make their forests more productive.

Wallace F. Custard, Virginia state forester, discussed the successful Virginia Reforestation of Timberlands Program that grew out of a 1966 forest survey. He said the Virginia survey showed that harvests were exceeding growth by 15 percent and that private forests were in poorer condition than those on industry and government lands. Since the reforestation program started in 1970, Virginia has had a positive growth-to-cut ratio. Custard said that the program accounted for timber stand improvement or regeneration on more than 150,000 acres between 1972 and 1978.

John Guthrie, of Wiggins, Miss., a consulting forester, discussed the Mississippi Forest Resources Development Program. He said nearly 132,000 acres of Mississippi land have been treated under the program with a total cost-share payment to landowners of about \$5.2 million. However, he added that only a small part of the forest acreage needing regeneration in Mississippi has been touched.

A panel discussion recommended pine regeneration on private nonindustrial lands as a challenge and an opportunity. The panel included Moderator Fred C. Gragg, manager of industry affairs for International Paper Co., Mobile, Ala., and president-elect of the Forest Farmers Association; Merle E. Conkin, National Forest Products Association, Washington, D.C.; and George W. Stanley, senior vice president of Kirby Forest Industries, Houston, Tex.

Another panel discussion was on forest taxation and was moderated by A. Felton Andrews, regional vice president of the Forest Farmers Association. Key speaker was Bradford S. Wellman, financial counselor from Bangor, Maine.

Senator Thad Cochran from Mississippi was a featured speaker during the final day. Other

speakers included Lt. Gov. Brad Dye of Mississippi and Richard C. Allen, Mississippi state forester.

Infrared Aerial Photography Estimates Timber Lost to SPB

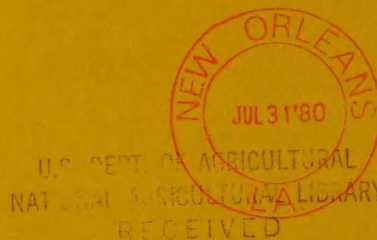
By using infrared aerial photography, pest management specialists can estimate how much annual timber loss is caused by the southern pine beetle in a specific region. Aerial photographs give an accurate and permanent record of an outbreak's development over a large area of mixed ownership. From aerial photographs, surveyors can even count the number of trees in each infestation.

Pest management specialists have more difficulty with the sampling method developed for aerial photography. Trees susceptible to SPB attack are distributed over a large and varied area, and ongoing control efforts make the interpretation of results more difficult during the period of data collection. The sporadic and fluctuating outbreaks may occur at different times in various states.

To test the effectiveness of aerial photography, specialists randomly selected forty-five 500-acre plots within a 3 million acre area in central Mississippi. Plots were located on National Forest lands, land owned by timber companies, and land owned by state and small private nonindustrial owners. High and low levels of beetle-caused tree mortality occurred throughout the area. Pilots used the Loran-C radio navigation system to locate sampling points, fly straight lines, and relocate sampling points on later flights.

From aerial photographs taken in April, 1978, interpreters estimated percent of crown closure, average height of dominant trees, and acreage of each infestation. To verify the aerial photographs, surveyors made ground checks of selected infestations. A stand volume table based on field data was used to determine each plot's timber volume loss. Then a prediction model was developed by relating the total timber volume loss to aerial photo measurements of stand height and crown closure. Additional aerial photographs were

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taken in July and September, and predicted losses were compared with the actual timber losses.

Pest management specialists discovered that tree height and the volume of timber loss had been underestimated. The specialists recommended a group effort and a better stand volume table for interpreting aerial photos. A group effort would decrease the turn-around time and would cross-check interpreters for consistency of results. Separate yield prediction models should be developed for planted and natural stands. The specialists also recommended that only infestations of six trees or more be recorded because the causes of tree death for smaller infestations are unknown.

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